

Claims

1. A method of inhibiting proliferation of cells which comprises the step of:
contacting cells with an amount of vpr protein or a
5 functional fragment thereof effective to inhibit cell proliferation; or
introducing into cells a nucleic acid molecule that comprises a nucleotide sequence that encodes vpr protein or a functional fragment thereof whereby said nucleotide sequence
10 is expressed by said cells.
2. The method of claim 1 wherein said cells are differentiated.
3. The method of claim 1 wherein said cells are undifferentiated.
- 15 4. A method of preventing lymphocyte activation which comprises the step of:
contacting a lymphocyte cell with an amount of vpr protein or a functional fragment thereof effective to prevent activation; or
20 introducing into cells a nucleic acid molecule that comprises a nucleotide sequence that encodes vpr protein or a functional fragment thereof whereby said nucleotide sequence is expressed by said cells.
5. The method of claim 1 wherein said cells are T cells,
25 B cells or monocytes.
6. A method of treating an individual diagnosed with or suspected of suffering from diseases characterized by hyperproliferating cells which comprises the step of administering to said individual an effective amount of a
30 pharmaceutical composition comprising

- a) vpr protein or a functional fragment thereof, or a nucleic acid molecule that comprises a nucleotide sequence that encodes vpr protein or a functional fragment thereof; and
- b) pharmaceutically acceptable carrier.

- 5 7. A method of treating an individual diagnosed with or suspected of suffering from an autoimmune disease which comprises the step of administering to said individual an effective amount of a pharmaceutical composition comprising
- a) vpr protein or a functional fragment thereof,
 - 10 or a nucleic acid molecule that comprises a nucleotide sequence that encodes vpr protein or a functional fragment thereof; and
 - b) pharmaceutically acceptable carrier.

8. The method of claim 7 wherein said autoimmune disease is selected from the group consisting of: rheumatoid arthritis,
- 15 multiple sclerosis, Sjogren's syndrome, sarcoidosis, insulin dependent diabetes mellitus, autoimmune thyroiditis, reactive arthritis, ankylosing spondylitis, scleroderma, polymyositis, dermatomyositis, psoriasis, vasculitis, Wegener's granulomatosis, Crohn's disease, ulcerative colitis, Lupus,
- 20 Grave's disease, myasthenia gravis, autoimmune hemolytic anemia, autoimmune thrombocytopenia, asthma, cryoglobulinemia, primary biliary sclerosis and pernicious anemia.

9. A method of treating an individual who has a transplanted organ or tissue which comprises the step of
- 25 administering to said individual an effective amount of a pharmaceutical composition comprising
- a) vpr protein or a functional fragment thereof, or a nucleic acid molecule that comprises a nucleotide sequence that encodes vpr protein or a functional fragment thereof; and
 - 30 b) pharmaceutically acceptable carrier.

10. A conjugated composition comprising:
- a first moiety which comprises isolated vpr or a rip-1-binding fragment thereof;

and a second moiety which comprises an active agent selected from the group consisting of a drug, a toxin, a nucleic acid molecule and a radioisotope;

wherein said first moiety is covalently linked
5 to said second moiety.

11. The conjugated composition of claim 10 wherein said first moiety comprises vpr.

12. The conjugated composition of claim 10 wherein said second moiety comprises a nucleic acid molecule.

10 13. The conjugated composition of claim 10 wherein said second moiety comprises a DNA molecule.